PENNYCRESS ESTABLISHMENT FOLLOWING CORN HARVEST

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IPREFER Integrated Pennycress Research Enabling Farm & Energy Resilience

INTRODUCTION

Although cover crops are an important practice for environmental conservation in agriculture, only ~3% of Illinois corn and soybean acres utilize cover crops, largely due to the cost of implementation. Pennycress, developed as an oilseed cash cover crop, could present a solution to this problem.

A profitable yield for pennycress has successfully been achieved in breeding plots, but challenges such as late corn harvest and massive amounts of corn stover interfere with the establishment of this small-seeded cover crop. Therefore, two studies have been initiated to identify best practices for the fall establishment of pennycress following corn.

OBJECTIVES

- Identify best practices for corn harvest preceding pennycress
- Determine if pennycress yield can be improved by planting earlier-maturing corn varieties
- Determine if pennycress yield can be improved by breaking up crop residue after corn harvest

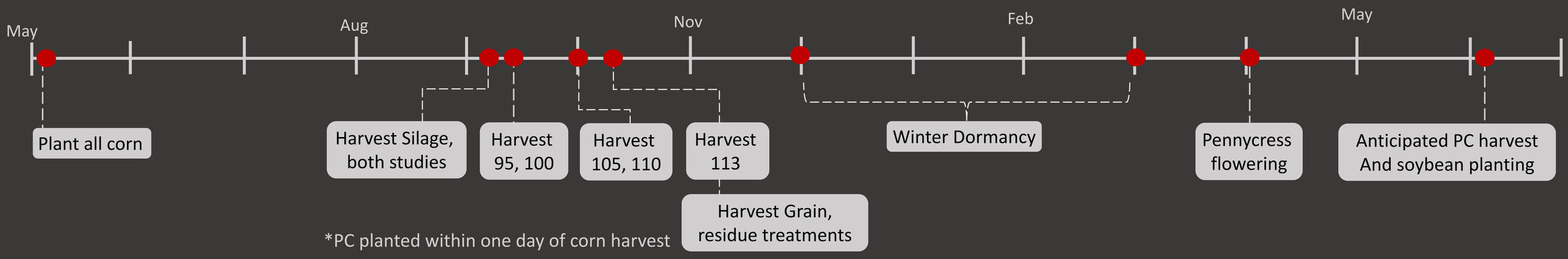
BACKGROUND

Corn Relative Maturity (CRM) refers to the number of days after planting when corn will be harvested. Hybrids with a shorter CRM often have lower yields but mature earlier in the fall, which would be beneficial for pennycress establishment.

Residue Management refers to methods of breaking up remaining corn residue, potentially allowing improved seed-to-soil contact.

TIMELINE

Corn harvest | Drilling pennycress | Fall establishment in full residue | Fall establishment in silage (control) | Flowering pennycress | Maturing pennycress | Pennycress harvest | Planting soybean



*PC planted within one day of corn harvest

METHODS

- <u>Residue Management</u>
  - 6 replications of 5 treatments
    - **Silage (remove entire plant), drill PC (control)**
    - **Grain corn harvest, no-till, drill PC**
    - **Grain corn harvest, no-till, broadcast PC**
    - **Grain corn harvest, vertical till, broadcast PC**
    - **Grain corn harvest, interseed PC before harvest**
  - Plant PC in the fall, harvest for yield in early summer
- <u>Corn Relative Maturity</u>
  - 6 replications of 6 treatments
  - Each treatment is a different corn maturity group:
    - **95, 100, 105, 110, 113, silage (control)**
  - Drill PC after corn harvest in the fall and harvest for yield in the early summer

CONCLUSION

- For the environmental and economic benefit to be seen, pennycress needs to be successfully and profitably grown in current crop rotations.
- Both studies will be harvested in June and Pennycress yield will be evaluated.

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